

**राष्ट्रिय समाचार समिति**  
अधिकृतस्तर तह ६ को अधिकृत (प्राविधिक) पदको  
**खुला प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम**

पाठ्यक्रमको रूपरेखालाई निम्न अनुसार विभाजन गरिएको छ :

क्र.स	चरण	परीक्षाको प्रकार	पूर्णाङ्क
१	प्रथम चरण (First Phase)	लिखित परीक्षा	२००
२	द्वितीय चरण (Second Phase)	प्रयोगात्मक र अन्तर्वार्ता	८०

**परीक्षा योजना (Examination Scheme)**

१. प्रथम चरण (First Phase) : लिखित परीक्षा (Written Examination)

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	समूह	प्रश्न सङ्ख्या X अङ्क	समय
प्रथम	कम्प्युटर सम्बन्धी	१००	५०	वस्तुगत बहुवैकल्पिक	क, ख	५० प्रश्न X २ अङ्क	४५ मिनेट
द्वितीय		१००	४०	विषयगत	क, ख	५ प्रश्न X १० अङ्क ५ प्रश्न X १० अङ्क	२ घण्टा ३०मिनेट

२. द्वितीय चरण (Second Phase) : प्रयोगात्मक परीक्षा र अन्तर्वार्ता (Practical Examination & Interview)

क्र.स.	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	समय
१	प्रयोगात्मक परीक्षा	५०	२५	प्रयोगात्मक (Practical) (५ प्रश्न X १० अङ्क)	१ घण्टा ३०मिनेट
२	व्यक्तिगत अन्तर्वार्ता (Individual Interview)	३०		मौखिक (Oral)	

**द्रष्टव्य :**

- यस पाठ्यक्रम योजनालाई लिखित परीक्षा तथा प्रयोगात्मक परीक्षा र अन्तर्वार्ता गरी दुई चरणमा विभाजन गरिएको छ ।
- प्रश्नपत्र अंग्रेजी वा नेपाली भाषामा वा नेपाली र अंग्रेजी दुवै भाषामा हुनेछ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- पाठ्यक्रमको प्रथम तथा द्वितीय पत्रको परीक्षाको विषयवस्तु एउटै हुनेछ ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको (Calculator) प्रयोग गर्न पाइने छैन ।
- विषयगत प्रश्नका लागि तोकिएका अङ्कका हकमा एउटा लामो प्रश्न वा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- आयोगबाट संचालन हुने परीक्षामा परीक्षार्थीले मोबाइल वा यस्तै प्रकारका विद्युतीय उपकरण परीक्षा हलमा लैजान पाउने छैन ।

९. बहुवैकल्पिक प्रश्नहरूको उत्तर सही दिएमा प्रत्येक सही उत्तर बापत २ अङ्क प्रदान गरिनेछ भने गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
१०. यस पाठ्यक्रम योजनाअन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएता पनि पाठ्यक्रममा परेका कानुन, ऐन, नियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संसोधन भएका वा संसोधन भई हटाईएका वा थप गरी संसोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
११. वस्तुगत बहुवैकल्पिक परीक्षाका प्रश्न संख्या निम्नानुसार हुनेछन् ।

क्र.सं.	पाठ्यांश	प्रश्न संख्या
1.	Computer Fundamentals	8
2.	Operating System	5
3.	Computer Networks	5
4.	Web Technology	4
5.	e-Commerce Technology	4
6.	Structured and OOP	5
7.	Data Structures and Algorithm	4
8.	Software Engineering	4
9.	Database Management System	6
10.	Constitution, Laws, and IT in Nepal	5
Total		50

१२. प्रथम चरणको लिखित परीक्षामा छनौट भएका उम्मेदवारहरूलाई मात्र भाग २ को प्रयोगात्मक परीक्षा र अन्तर्वार्तामा सम्मिलित गराइनेछ ।
१३. प्रयोगात्मक परीक्षाका प्रश्न संख्या निम्नानुसार हुनेछन् ।

S.N.	Topics	No. of Questions	Marks	Time (Minutes)
1.	Operating System	1	5	1 Hour 30 Minutes
2.	DBMS	1	15	
3.	Web Technology	1	5	
4.	Computer Networks	1	10	
5.	Structured & OOP	1	15	
Total		5	50	

१४. प्रथम चरणको लिखित परीक्षा र द्वितीय चरण को प्रयोगात्मक परीक्षा र अन्तर्वार्ताको कुल अङ्क योगका आधारमा प्रयोगात्मक परीक्षामा उत्तीर्ण हुने परीक्षार्थीहरूलाई मात्र योग्यताक्रम सूचीमा समावेश गरी अन्तिम परीक्षाफल प्रकाशित गरिनेछ ।
१५. पाठ्यक्रम लागू मिति :

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खुला प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

**Contents**

**खण्ड क (पूर्णाङ्क ५०)**

**1. Computer Fundamentals**

- 1.1 Computer :- Definition, History, Generation, Characteristics, Types & Applications
- 1.2 Overview of a computer system :-
  - 1.2.1 Data and data processing
  - 1.2.2 Hardware
    - 1.2.2.1 Definition of Hardware
    - 1.2.2.2 Input Unit- Keyboard, Mouse, Scanner etc.
    - 1.2.2.3 CPU-Arithmetic Logic Unit (ALU), Control Unit (CU), Memory Unit
    - 1.2.2.4 Output Unit: - Monitor, Printer, etc.
    - 1.2.2.5 Storage devices :- Primary & Auxiliary Memory (Floppy Disk, Hard Disk, Compact Disk, DVD, Super Disks, Zip Disks, Cartridge tape, Flash Disks, etc.)
    - 1.2.2.6 Others: - Network card, Modem, Sound card, etc.
  - 1.2.3 Software
    - 1.2.3.1 Definition & Types of Software
    - 1.2.3.2 Programming Language
  - 1.2.4 Live ware
  - 1.2.5 Firmware and Cache Memory
- 1.3 Digital Design:
  - 1.3.1 Digital and Analog Systems.
  - 1.3.2 Number System: Number Systems (Binary, Octal, Decimal, Hexadecimal) and their conversion,
  - 1.3.3 Logic Gates,
  - 1.3.4 Combinational Logic Circuits,
  - 1.3.5 Sequential Logic,
  - 1.3.6 Arithmetic Circuits,
- 1.4 Setting & Protection of Computer Room and Computer
- 1.5 Concept of Computer related threats (Viruses, worms, Trojan, phishing etc.),their Remedies and protection
- 1.6 Introduction to ASCII and Unicode and font types
- 1.7 Security
  - 1.7.1 Physical Security of Information Technology Infrastructure
  - 1.7.2 Digital security: Antivirus, Firewalls, Antispyware, User authentication types, IPS/IDS
  - 1.7.3 Common security threats: Social engineering, Malware, Phishing, Spyware, Viruses, Worms, Trojans, Distributed Denial of Services

**2. Operating System**

- 2.1 Introduction, Types and Functions of operating systems
- 2.2 **Processing and Threads:** Symmetric Multiprocessing, Micro-kernels, Concurrency, Mutual Exclusion and Synchronization, Deadlock

- 2.3 Scheduling
- 2.4 Memory Management
- 2.5 **Input Output and Files:** I/O devices and its organization, Principles of I/O software and hardware, Disks, Physical Structure of the disk, Concept of File and Folder, organization of Files and directories, File System Implementation, Types of files and file extensions, Wildcards and Pathname
- 2.6 **Distributed Systems:** Distributed Message passing, RPC, Client/Server Computing, Clusters
- 2.7 **Security:** Authentication and Access Authorization, System Flaws and Attacks, Trusted System
- 2.8 **Common Operating Systems:** MS-DOS (Introduction, System files of MS-DOS and their functions, using DOS commands, Creating and Using AUTOEXEC.BAT and CONFIG.SYS file), Windows Family of Products, Unix Family of Products, Linux Family of Products, Windows Networking, Windows Architecture, Linux Architecture, Troubleshooting Windows, & Linux, Managing Network Printing, Managing Hard Disks and Partitions, Monitoring and Troubleshooting Windows, Users, Groups and Permission on Linux and Windows. Sharing file, folder, printer, application, etc.

### 3. Computer Networks

- 3.1 **Introduction:** Definition, Types, Network Media and Topologies
- 3.2 Familiarity with internet browsers (IE, Firefox, Opera, Safari, Google Chrome etc.)
- 3.3 Concept about E-mail, Internet, Intranet, Extranet
- 3.4 OSI Reference model
- 3.5 Introduction to Protocol, Protocol stack, Switching
- 3.6 **Link Layer:** services, error detection and correction, multiple access protocols, LAN addressing and ARP (Address Resolution Protocol), Ethernet, CSMA/CD multiple access protocol, Hubs, Bridges, and Switches, Wireless LANs, PPP (Point to Point Protocol), Wide area protocols
- 3.7 **Network Layer:** Services, datagram and virtual circuits, routing principles and algorithms, Internet Protocol (IP), IP address, Subnet mask, IP addressing, IP transport, fragmentation and assembly, ICMP (Internet Control Message Protocol), routing on the internet, RIP (Routing Information Protocol), OSPF (Open Shortest Path First), router internals, IPv6
- 3.8 **Transport Layer:** principles, multiplexing and de-multiplexing, UDP, TCP, flow control, principles of congestion control, TCP congestion control
- 3.9 **Application Layer:** Web and Web caching, FTP (File Transfer Protocol), DNS (Domain Name Service), socket programming
- 3.10 Distributed system, Clusters, Network Security, Disaster Recovery, Data Storage Techniques: Clustering, NAS, SAN

### 4. Web Technology

- 4.1 Introduction to Web Page and Content Management System
- 4.2 Introduction to HTML, HTML document and HTML Tags
- 4.3 Working with Text, Hyperlinks, Images, Lists, Forms, Tables, Frames, etc.
- 4.4 Familiarity with Cascading Style Sheet, and Rich Site Summary
- 4.5 Familiarity with JavaScript, XML
- 4.6 Concept of Web server and Proxy server

#### 4.7 Social Networking and Social Media in Governance

### 5. E-Commerce Technology

- 5.1 Introduction to E-Commerce.
- 5.2 Electronic Commerce Strategies.
- 5.3 Electronic Commerce Security Issues.
- 5.4 E-governance, Success Models of E-Governance.
- 5.5 E-Business: b2b, b2c, b2e, c2c, g2g, g2c.
- 5.6 Principles of Electronic Payment, Strategies & Systems.
- 5.7 E-marketing, Reverse Engineering.
- 5.8 E-Banking, EDI Methods, SWIFT.
- 5.9 Encryption and Decryption Methods, XML, Layout Managers, Event Model.

### खण्ड ख (पूर्णाङ्क ५०)

### 6. Structured and Object Oriented Programming

- 6.1 Data types, ADT
- 6.2 Operators, variables and assignments, control structures, Procedure/function
- 6.3 Class definitions, encapsulation, inheritance, object composition, Polymorphism
- 6.4 Pattern and framework
- 6.5 Programming with C, C++, Java

### 7. Data Structures and Algorithms

- 7.1 **General concepts:** Abstract data types, Time and space analysis of algorithms, Big Oh, theta notations, Average, best, worst case analysis
- 7.2 **Linear data structures:** Lists, Linked Lists, Stacks, Queues, Priority Queue
- 7.3 **Trees:** General and binary trees, Representations and traversals, Binary search trees, balancing trees, AVL trees, 2-3 trees, red-black trees, self-adjusting trees, Splay Trees
- 7.4 **Algorithm design techniques:** Greedy methods, Priority queue search, Exhaustive search, Divide and conquer, Dynamic programming, Backtracking and Recursion
- 7.5 Searching, Merging and Sorting

### 8. Software Engineering

- 8.1 **Software process:** Software Process models, risk-driven approaches
- 8.2 **Software Project Management:** Relationship to lifecycle, project planning, project control, project organization, risk management, cost models, configuration management, version control, quality assurance,
- 8.3 **Software requirements:** Requirements analysis, requirements solicitation, analysis tools, requirements definition, requirements specification, static and dynamic specifications, requirements review.
- 8.4 **Software design:** Design for reuse, design for change, design notations, design evaluation and validation, Software Architecture, Context diagram and DFD, Object Modeling: Object-Oriented Concept, Object Structure, Object Feature, Class and Object, Use Case Diagram, State Diagram, Event Flow Diagram
- 8.5 **Implementation:** Programming standards and procedures, modularity, data abstraction, static analysis, unit testing, integration testing, regression testing, tools for testing, fault tolerance.

- 8.6 **Maintenance:** The maintenance problem, the nature of maintenance, planning for maintenance
- 8.7 **SE issues:** Formal methods, tools and environments for software engineering, role of programming paradigm, process maturity and Improvement, ISO standards, SEI-CMM, CASE tools

## 9. Database Management System

- 9.1 **Introduction:** The relational model, ER model, SQL, Functional dependency and relational database design, File structure
- 9.2 **Transaction Management and Concurrency Control:** Concurrent execution of programs, transactions, Concurrency control techniques
- 9.3 **Crash Recovery:** Types of failure, Recovery techniques
- 9.4 Query Processing and Optimization
- 9.5 **Indexing:** Hash based indexing, Tree based indexing
- 9.6 Security Management System
- 9.7 SQL and Embedded SQL, Writing Basic SQL SELECT Statements, Restricting and Sorting data, Single Row Functions, Displaying Data from Multiple Tables, Aggregation of Data Using Group Functions, Sub Queries, Manipulating Data and Creating & Managing Tables, Creating Views and Controlling User Access,
- 9.8 **Database Design:** Logical Design, Conceptual Design, Mapping Conceptual to Logical, Pragmatic issues, Physical Design, Integrity and Correctness, Relational Algebra, Relational Calculus. Normalization: 1NF, 2NF, 3NF, BCNF, 4NF, 5NF, DKNF, Database Design with major RDBMS products: Oracle, Sybase, DB2, MS-SQL.

## 10. Constitution, Laws, and IT in Nepal

- 10.1 Constitution of Nepal (communication related)
- 10.2 History of IT in Nepal
- 10.3 ICT Policy, 2072 BS
- 10.4 Electronic Transaction Act, 2063 B.S.
- 10.5 सार्वजनिक खरीद ऐन, २०६३ तथा नियमावली, २०६४
- 10.6 आम संचार नीति, २०७३
- 10.7 राष्ट्रिय समाचार समिति ऐन २०१९, यसका नियमावली र यसका कर्मचारी सेवाशर्त विनियमावली
- 10.8 सूचना तथा सञ्चारसम्बन्धी दीर्घकालीन नीति २०५९
- 10.9 सूचनाको हक सम्बन्धी ऐन, २०६४, र यसको नियमावली
- 10.10 छापाखाना र प्रकाशनसम्बन्धी ऐन, २०४८ र यसको नियमावली
- 10.11 प्रेश काउन्सिल ऐन, २०४८ र यसको नियमावली
- 10.12 समाचार सङ्कलन, फोटो र भिडियो छायाङ्कन तथा संप्रेषणमा इन्टरनेटको उपयोग
- 10.13 पत्रकार आचारसंहिता (राष्ट्रिय, अन्तर्राष्ट्रिय) र नकारात्मक आचार नियन्त्रणका व्यवस्था
- 10.14 अन्तर्राष्ट्रिय समाचार संस्थाहरू एपी, एएफपी, सिन्डवा, पीटीआई, एएनआई, रायटर्सका इतिहास, सङ्गठन संरचना